

Notes on the naturalised Flora of Queensland, 3*

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Summary

Forster, P.I. (1997). Notes on the naturalised flora of Queensland, 3. *Austrobaileya* 5(1): 113–119. Naturalisations in Queensland are documented for *Graptopetalum paraguayense* (N.E.Br.) Walther (Crassulaceae), *Kalanchoe lateritia* Engl. (Crassulaceae), *Jasminum mesneyi* Hance (Oleaceae), *Jatropha podagrica* Hook. (Euphorbiaceae), *Manihot esculenta* Crantz (Euphorbiaceae), *M. grahamii* Hook., *M. glaziovii* Muell.Arg., *Persicaria capitata* (Buch.-Ham. ex D.Don) H.Gross (Polygonaceae), *Sedum praealtum* A.DC. (Crassulaceae) and *Vernicia fordii* (Hemsl.) Airy Shaw (Euphorbiaceae). A generic key to naturalised genera of Crassulaceae, and a key and descriptions of the naturalised species of *Manihot* are presented. Orthography of the family name Aloaceae is highlighted and name changes in *Aloe* L. discussed.

Keywords: *Graptopetalum paraguayense*, *Kalanchoe lateritia*, *Jasminum mesneyi*, *Manihot glaziovii*, *Manihot esculenta*, *Manihot grahamii*, *Jatropha podagrica*, *Persicaria capitata*, *Sedum praealtum*, *Vernicia fordii*, *Aloe maculata*, Queensland Flora

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Introduction

The flora of Queensland continues to increase, not only from the number of recognised indigenous flora, but from an ever burgeoning range of exotics that may be considered as naturalised. Few of these ‘alien’ plants (viz. Johnson 1995) pose much threat in the long term or have the potential to become serious weeds in natural or man-made ecosystems. Nevertheless, documentation of their naturalisation together with accurate identification remains an important priority for long-term management as some plants have been known to become serious weeds after many years of low-level naturalisation.

Plants considered naturalised in Queensland have recently been listed in Henderson (1997), updating the listing in Henderson (1994) and in a number of accounts in the ‘Flora of Australia’. This paper documents nine taxa from diverse families that can be considered as naturalised in Queensland with three representing additional taxa to those listed in Henderson (1997). Nearly all should be labelled as ‘adventive’ (sensu Kloot 1987)

at this stage. Kloot (1987) defined five categories of naturalisation, of which the categories ‘adventive’ and ‘established’ are most relevant here. ‘Adventive’ was defined by Kloot (1987) as “A plant that is persisting without, or in spite of, human intervention at one or few separate locations, generally for less than 25 years. Generally reproducing only sparingly”. This category is suitable for many of the garden escapees that are found near to habitation. ‘Established’ was defined by Kloot (1987) as “where an alien plant is widespread over large parts...or locally abundant in one or more regions, and generally reproducing freely”.

Four of the species documented below are succulents additional to those listed elsewhere (Forster 1996b); these are plants that are invariably poorly represented in the herbarium record due to difficulty with specimen preparation. In addition original keys for some taxa are given to enable identification and some nomenclatural matters are discussed that update previous accounts in the ‘Flora of Australia’.

Materials and Methods

Taxa discussed in this paper are based on collections in the Queensland Herbarium (BRI).

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* Part 2: *Austrobaileya* 3:761–763 (1992).

New Naturalisation Records

CRASSULACEAE

Graptopetalum Rose

This is the first record of the genus becoming naturalised.

- 1. Graptopetalum paraguayense** (N.E.Br.) Walther, Cact. Succ. J. (Los Angeles) 9: 108 (1938).

Two subspecies are known with *G. paraguayense* subsp. *paraguayense* recorded here.

Specimen examined: Queensland. MORTON DISTRICT: Boyce's Quarry project, Bundamba Tafe College, Ipswich, Oct 1995, Forster PIF17876, Bird & Figg (AD, BRI).

Notes: *G. paraguayense* subsp. *paraguayense*, despite the specific epithet, is thought to be native to Mexico but has never been recollected from a known wild locality since its introduction to horticulture in the 1800s. A second subspecies, *G. paraguayense* subsp. *bernalense* Kimn. & Moran is native to Tamaulipas, Mexico (Kimnach & Moran 1986). This species propagates from fallen leaves or stem sections and is a localised adventive at the given locality.

Kalanchoe Adans.

This is the first record of this genus becoming naturalised.

- 2. Kalanchoe lateritia** Engl., Pflanzenw. Ost-Afr. C. 189 (1895).

Three varieties are recognised within *K. lateritia* (Raadts 1977; Wickens 1987) with *K. lateritia* var. *lateritia* recorded here.

Specimen examined: Queensland. BURNETT DISTRICT: Neurum Creek, c. 21 km SW of Gin Gin, 25° 07'S, 151° 48'E, May 1995, Sparshott KMS556 & Hohnen (BRI).

Notes: *K. lateritia* is indigenous to East Africa where it is found in Kenya and Tanzania (Raadts 1977; Wickens 1987). *K. lateritia* var. *lateritia* is infrequently cultivated in Queensland gardens and propagates both

vegetatively and from seeds. It is a localised adventive at the given locality.

Delimitation of the genera *Bryophyllum* and *Kalanchoe* has been debated for many years (Forster 1985) and some workers prefer a single, broadly circumscribed genus (Rauh 1995; Boiteau & Allorge-Boiteau 1996). The case for both to be recognised is strong (Lauzac-Marchal 1974) and the generic treatments of Toelken (1985) and Wickens (1987) are supported herein. All of the taxa lumped under the common name of 'Mother of Millions' belong to the genus *Bryophyllum* of which only *B. daigremontianum* (Raym.-Hamet & Perr.) Berger, *B. delagoense* (Eckl. & Zeyh.) Schinz (syn. *B. tubiflorum* Harv.), a hybrid of these first two species, and *B. pinnatum* (Lam.) Oken should be considered as serious established weeds. Other species of *Bryophyllum* are generally non-invasive garden or shadehouse plants and undeserving of eradication programs advocated by weed control agencies.

Sedum L.

This is the first record of this genus becoming naturalised.

- 3. Sedum praealtum** A.DC., 10^{me} Not. Pl. Rar. Jard. Genève 21 (1824).

Three subspecies are recognised within *S. praealtum* (Stephenson 1994), with *S. praealtum* subsp. *praealtum* recorded here.

Specimen examined: Queensland. MORETON DISTRICT: Boyce's Quarry project, Bundamba Tafe College, Ipswich, Oct 1995, Forster PIF17878, Bird & Figg (BRI).

Notes: *S. praealtum* subsp. *praealtum* is thought to originate from Central America, probably from the tropical lowlands of Vera Cruz (Stephenson 1994). The species has been cultivated in many countries for centuries and is known to be an occasional adventive in eastern Europe (Stephenson 1994). In Australia naturalisations have been previously recorded from New South Wales and South Australia (Forster 1996b). The species is a localised adventive at the given locality.

The genera of Crassulaceae (including the native *Crassula*) in Queensland may be distinguished with the following key -

1. Stamen number equal to petal number **Crassula**
Stamen number twice petal number 2
2. Floral parts in fours 3
Floral parts in fives 4
3. Flowers erect; filaments fused to corolla tube at or above middle **Kalanchoe**
Flowers pendulous; filaments fused to corolla tube in lower third **Bryophyllum**
4. Inflorescence terminal **Sedum**
Inflorescence lateral **Graptopetalum**

EUPHORBIACEAE

Jatropha L.

Two species of *Jatropha* have been previously recognised as naturalised in Queensland, namely *J. curcas* L. and *J. gossypifolia* L. (Henderson 1994, 1997).

4. **Jatropha podagrica** Hook., Bot. Mag. t. 4376 (1848).

Specimen examined: Queensland. SOUTH KENNEDY DISTRICT: Keswick Island, Sep 1996, *Batianoff* 960912 & *Champion* (BRI).

Notes: *J. podagrica* is native to Mexico (Dehgan & Webster 1979) and is widely cultivated in subtropical and tropical gardens in eastern Australia. It has been recorded recently as an adventive near abandoned habitation. The species propagates only from seed.

Key to the naturalised species of *Jatropha*

1. Foliage and stems with stipitate glandular trichomes **J. gossypifolia**
Foliage and stems glabrous or with simple trichomes 2
2. Stipules entire; leaf lamina broadly-ovate **J. curcas**
Stipules multifid; leaf lamina 3-5 palmatifid or palmatipartite **J. podagrica**

Manihot Mill.

There seems to have been some confusion as to both the identity and diversity of the naturalised taxa of *Manihot*. Stanley (1983) lists *M. esculenta* Crantz as being naturalised

in south-eastern Queensland and Henderson (1994) also lists this species for the entire State. *M. glaziovii* Muell.Arg. and *M. grahamii* Hook. also occur as naturalised species (Henderson 1997). Because of the apparent confusion, short descriptions are provided for the three species, as well as a key to distinguish them.

Key to the naturalised species of *Manihot*

1. Leaf lamina lobes broadly ovate to obovate; fruits globose ***M. glaziovii***
 Leaf lamina lobes lanceolate, oblong, oblanceolate or ovate; fruits ovoid
 or subglobose 2
2. Root tubers present; male flower sepals lanceolate- triangular; fruits ovoid,
 15–17 mm long ***M. esculenta***
 Root tubers absent; male flower sepals triangular-ovate; fruits
 subglobose, c. 14 mm long ***M. grahamii***

5. *Manihot esculenta* Crantz, Inst. Rei Herb.
 1: 167 (1766).

Subshrub or shrub to 5 m high. Root tubers up to 50 cm long. Stipules lanceolate-triangular, 5–11 mm long. Leaves deeply palmatipartite, 3–7 lobed, the lobes oblanceolate to lanceolate or ovate, 5–17 cm long, 1–6 cm wide; tip acute to acuminate; base attenuate to cuneate. Male flowers: pedicels 2–7 mm long; calyx lobes lanceolate-triangular, 4–6 mm long, 2–4 mm wide, tube 4–6 mm long. Female flowers: pedicels 5–12 mm long; calyx lobes triangular-ovate 6–10 mm long, 2.5–5 mm wide. Fruits ovoid, 15–17 mm long, 14–15 mm diameter. Seeds ellipsoid, c. 11 mm long, 5.5–5.8 mm wide. *Tapioca* or *Cassava*.

Specimens examined: Queensland. COOK DISTRICT: Darnley Island, Torres Strait, 9° 35'S, 143° 46'E, Jul 1974, *Heatvole* 449 (BRI); 3.5 km SE of Weipa Mission, 12° 42'S, 141° 55'E, Jul 1974, *Specht & Salt* W324 (BRI); McDonnell Creek behind school, 17° 12'S, 145° 53'E, Dec 1993, *Forster* PIF14451 (BRI). NORTH KENNEDY DISTRICT: 1 km N of Cardwell, 18° 16'S, 146° 01'E, Apr 1975, *McDonald* 1469 & *Batianoff* (BRI).

Notes: *M. esculenta* is the species used for production of cassava and is native to tropical South America. The species is widely cultivated in the tropics and is naturalised as an adventive in a few places in northern Queensland where it is an escape from cultivation. Propagation occurs from division of the starchy root-storage tubers. It is uncertain whether the species reproduces sexually in Australia as no fertile specimens have been sighted and the population at McDonnell Creek showed no evidence of flowering or fruiting.

6. *Manihot grahamii* Hook., Icon Pl. 6: t: 530
 (1843).

Subshrub or shrub to 4 m high. Root tubers absent. Stipules lanceolate, 9–15 mm long. Leaves deeply palmatipartite, 5–13 lobed, the lobes oblong to oblanceolate, 5–14 cm long, 0.9–3.5 cm wide; tip acuminate; base attenuate. Male flowers: pedicels 7–10 mm long; calyx lobes triangular-ovate, 4–10 mm long, 3–5 mm wide, tube 5–8 mm long. Female flowers: pedicels 7–9 mm long; calyx lobes triangular-ovate, 10–12 mm long, 5–5.5 mm wide, tube 1–3 mm long. Fruits subglobose, c. 14 mm long and 15 mm diameter. Seeds ellipsoid, c. 12 mm long and 8 mm wide.

Specimens examined: Queensland. DARLING DOWNS DISTRICT: Gowrie Creek, Toowoomba, Feb 1984, *Swarbrick* 7382 (BRI). MORETON DISTRICT: Chapel Hill, Jan 1981, *Pieters* JT958 (BRI); Kangaroo Point, Brisbane, Mar 1933, *White* 8649 (BRI); Enoggera Creek, The Gap, Brisbane, Nov 1993, *Forster* PIF14258 (A, BRI, K, L, MEL, QRS); Teviot Brook, Dugandan, Apr 1994, *Forster* PIF15086 (A, BRI, MEL, NSW, QRS); Kalbar, Jan 1969, *Thomas* [AQ204048] (BRI).

Notes: *M. grahamii* is native to Brasil, Argentina, Paraguay and Uruguay and is naturalised as an adventive on a small scale in south-eastern Queensland and north-eastern New South Wales. Propagation occurs from seeds. It is the most widely encountered species of *Manihot* in Australia and is often cultivated as an ornamental, although the roots do not produce starchy tubers (Rogers & Appan 1973). James & Harden (1990), in describing collections from north-eastern New South Wales, misidentified this species as *M. flabellifolia*.

7. **Manihot glaziovii** Muell.Arg. in Martius,
Fl. Bras. 11(2): 446 (1874).

Shrub or small tree to 6 m high. Root tubers absent. Stipules lanceolate, c. 5 mm long. Leaves deeply palmatifid, 3–5 lobed, the lobes broadly ovate, obovate or obovate-lanceolate, 4–15 cm long, 2–9.5 cm wide; tip obtuse to rounded; base attenuate to rounded. Male flowers: pedicels 7–9 mm long; calyx lobes triangular, 8–9 mm long, c. 6 mm wide, tube 6–7 mm long. Female flowers: pedicels 8–15 mm long; calyx lobes lanceolate, c. 12 mm long 3.5–4 mm wide. Fruits globose, 18–20 mm long, 18–22 mm diameter. Seeds ovoid, 13–15 mm long, 9–12 mm wide.

Specimens examined: Queensland. COOK DISTRICT: foothills of Mt Bartle Frere, Aug 1984, Jago 600 (BRI, QRS). SOUTH KENNEDY DISTRICT: Finchhatton, Sep 1942, Goodchild [AQ206988] (BRI).

Notes: *M. glaziovii* is native to Brasil and is naturalised as an adventive in at least one locality in north-eastern Queensland. It is cultivated to a small extent in high rainfall areas of the Wet Tropics (R.L.Jago, pers. comm. 1994), but whether any products are harvested from the plant is uncertain as the roots are not supposed to be specialised for starch storage (Rogers & Appan 1973).

Vernicia Lour.

The genus *Vernicia* is closely allied to *Aleurites* J.R.Forst. & G.Forst. and has sometimes been included in it. Airy Shaw (1966) recognised *Vernicia* as distinct and this has been supported in subsequent publications (Radcliffe-Smith 1987; James & Harden 1990; Forster 1996a). *Vernicia* is considered to comprise three species, all of which are native to Asia. The genus has not been previously recorded as naturalised in Queensland.

8. **Vernicia fordii** (Hemsl.) Airy Shaw, Kew
Bull. 20: 394 (1966).

Specimen examined: Queensland. MORETON DISTRICT: c. 9 km from Nambour on Maroochy road, Mar 1979, Zande (BRI).

Notes: *V. fordii* was introduced to Australia during the 1930s for the production of 'Tung Oil' used in waterproofing, varnishes and

lacquers with extensive plantations established in north-eastern New South Wales, south-eastern and north-eastern Queensland (Buzacott 1932; Gibb 1938; McKay 1940). Eventual replacement with synthetic substances 'sounded the death-knell' for an industry that in 1938 consumed 170,632,000 pounds weight throughout the western world (Gibb 1938).

James & Harden (1990) record *V. fordii* as naturalised in New South Wales based on specimens from the Sydney area. Stanley (1983) and Henderson (1994) did not list the species, and it is recorded here (with reservations) as being an adventive in the Nambour region of south-eastern Queensland with some large trees highly visible from the Bruce Highway. A single tree has also been sighted on the edge of a forestry plantation at Gadgarra State Forest on the Atherton Tableland (pers. obs. 1996), but this is probably a planted individual rather than an adventive. The extensive plantations established in the 1930s in the Johnston River valley in north-eastern Queensland no longer exist (R.L.Jago, pers. comm. 1996).

OLEACEAE

Jasminum L.

Queensland has eight native species of *Jasminum*, but none of the exotic species cultivated in gardens have been previously listed as naturalised (Henderson 1994).

9. **Jasminum mesneyi** Hance, J. Bot. 20: 37
(1882).

Specimens examined: Queensland. BURNETT DISTRICT: Cushnie road, 1.5 km S off Proston to Wondai road, opposite Springs road, 26° 15'S, 151° 46'E, Sep 1996, Forster PIF19613 & Ryan (AD, BRI, MEL). MORETON DISTRICT: Collingwood Park, Redbank, Ipswich, Sep 1995, Bird [AQ584205] (BRI).

Notes: *J. mesneyi* (Primrose Jasmine) is native to western China and commonly grown in temperate and subtropical gardens in Europe, north America and eastern Australia. Most plants in cultivation, and undoubtedly those in Australia, are supposed to originate from live material collected near Mengzi, southern Yunnan by E.H.Wilson in 1899 (Lancaster

1989). In Queensland it has occasionally become established as an adventive where garden rubbish is deposited and appears to propagate by suckering. Wilson's original collection (with the double corolla) supposedly did not propagate from seed although subsequent collections by Lancaster (with mainly single corollas) bore seed (Lancaster 1989).

POLYGONACEAE

Persicaria (L.) Miller

There are eleven native species of *Persicaria* recorded for Queensland, but no naturalised ones (Henderson 1994, 1997). The following species is recorded as naturalised in New South Wales (Wilson 1990).

10. *Persicaria capitata* (Buch.-Ham. ex D. Don) H. Gross, Bot. Jahrb. Syst. 49: 277 (1913).

Specimen examined: Queensland, MORETON DISTRICT: Springbrook, Goomoolahra Falls, Warrie N.P., 28° 13'S, 153° 17'E, Oct 1996, *Forster* PIF19835 & *Leiper* (BRI, NSW).

Notes: *P. capitata* is native to Asia and is commonly grown in subtropical gardens as a ground cover. At Goomoolahra Falls, the species forms extensive, dense mats on natural rock faces and is displacing native vegetation. Propagation appears to be by vegetative layering.

Orthography of the family name Aloaceae

In the 'Flora of Australia' the classification system of Cronquist (1981) is followed wherein the monocot family Aloaceae is recognised. An excellent case for the familial spelling to be Aloaceae has been presented by Smith (1993) and has now been accepted for standard floras and guides in regions where the family is native (e.g. Carter 1994; Van Wyk & Smith 1996).

Aloe maculata versus *A. saponaria* (Aloaceae)

In the 'Flora of Australia' account of *Aloe*, *A. saponaria* (Ait.) Haw. is treated as being naturalised in Queensland (Forster & Clifford 1986). *A. saponaria* var. *ficksbergensis* G.Reyn. has subsequently been found naturalised in one locality in Queensland (Forster 1988). The name *A. saponaria* is now considered to be misapplied to this species and the name *A. maculata* All. is preferred (Glen & Smith 1995; Van Wyk & Smith 1996). Despite *A. saponaria* var. *ficksbergensis* being a well defined entity, Van Wyk & Smith (1996) do not recognise it and its status is uncertain at this point.

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